

Pseudorca crassidens (Owen, 1846)

English: False killer whale

German: Kleiner Schwertwal

Spanish: Orca falsa

French: Faux-orque

Family Delphinidae

1. Description

Despite its world-wide distribution throughout the tropics and subtropics, the false killer whale (*P. crassidens*) is one of the lesser-known large odontocetes. These are large members of the delphinid family, adult males reaching 6 m, while adult females reach 5 m in length. The skull is similar to that of *Orcinus orca*, but the two species don't seem to be closely related. The colour is largely black or dark grey, with a white blaze on the ventral side between the flippers. The head is rounded, without a beak, the body shape elongate, the dorsal fin falcate and positioned in the middle of the back. In males, the melon protrudes farther forward than in females (Baird, 2009). Body mass may reach up to 2,000 kg in males (Jefferson et al. 2008).

Currently, there are no recognized subspecies (Rice, 1998) although Kitchener et al. (1990) found substantial differences in cranial characters between false killer whales from Australia, Scotland and South Africa. While genetic comparison of specimens from the eastern North Pacific Ocean, the western North Pacific, Indian, and Atlantic oceans indicates low genetic variability, there seems to be a demographically isolated population with long-term fidelity around the main Hawaiian Islands (Chivers et al. 2007; Baird et al. 2008).

2. Distribution

<http://www.iucnredlist.org/apps/redlist/details/18596/0/rangemap>

Distribution of Pseudorca crassidens: tropical, subtropical and warm temperate waters, mainly offshore (Taylor et al. 2008; © IUCN).

Most of the distributional records and many of the data available for the species are the result of strandings (Odell and McClune, 1999). *P. crassidens* generally does not range beyond 50° latitude in either hemisphere (Jefferson et al. 1993) and is found world-wide in tropical and warm-temperate waters. It ranges north to Maryland, Scotland, Japan, Hawaii, and Alaska and south to Patagonia in Argentina, Cape Province, South Australia, Tasmania, South Island of New Zealand, Chatham Islands, and southern Chile (Taylor et al. 2008). Although there are numerous records of animals seen in cool temperate waters, these appear to be outside the normal range. Wanderers have been recorded as far afield as Norway and Alaska (Carwardine, 1995).

3. Population size

Although widely distributed, the species is not really abundant anywhere. There is no estimate of global abundance or of global or regional population trends (Baird, 2009; Taylor et al. 2008). In the past, *P. crassidens* appears to have been relatively common off the Japanese coast, and population estimates of 16,000 have been reported for the coastal waters of China and Japan (Odell and McClune, 1999 and refs. therein). Abundance in the eastern tropical Pacific has been estimated at 39,800 (CV=64%) (Wade and Gerrodette 1993).

The most recent data are for the USA EEZ: In the northern Gulf of Mexico the pooled abundance estimate for 2003-2004 of 777 (CV=0.56) (Mullin 2007) and for 1996-2001 of 1,038 (CV=0.71) are not significantly different ($P>0.05$) (Waring et al. 2008). A recent study conducted during 2000-2004 produced an estimate of 123 (CV=0.72) false killer whales for the Hawaii insular stock (Baird et al. 2005). The Hawaii pelagic stock (within the EEZ outside of 75 nm of the Main Hawaiian Islands) is estimated at 484 (CV = 0.93) false killer whales. And in the US EEZ of the Palmyra Atoll, a recent line transect survey produced an estimate of 1,329 (CV = 0.65) individuals (Barlow and Rankin 2007).

Finally, there are several recent observations from other areas. Johnston et al. (2008) recently observed 5 false killer whales in the western tropical Pacific off American Samoa. Gannier (2002) observed one false killer whale near the Marquesas Islands in French Polynesia. Kiszka et al. (2007) observed 2 false killer whales around Mayotte in the northern Mozambique Channel and Weir (2007) recently observed the species off northern Angola.

4. Biology and Behaviour

Habitat: *P. crassidens* is mainly seen in deep, offshore waters (and some semi-enclosed seas such as the Red Sea and the Mediterranean) and sometimes in deep coastal waters. It seems to prefer warmer temperatures (Carwardine, 1995). Off Hawaii, individuals were only infrequently encountered, and while found in depths from 38 to 4,331 m, sighting rates were greatest in depths $>3,000$ m (Baird et al. 2008). With the exception of sightings from the eastern tropical Pacific, data on distribution are lacking for most oceanic areas (Odell and McClune, 1999, and refs. therein).

Behaviour: The false killer whale readily approaches boats and is an exceptionally active and playful animal, especially for its large size (Carwardine, 1995).

Schooling: Sightings of groups of 10–20 individuals are common and group sizes as high as 300 have been reported, presumably forming when food is abundant. Herd size in recent mass strandings ranged from 28 to over 1,000 animals, and a mean herd size of 55 has been reported from Japanese waters. Mass-stranded herds have about equal numbers of males and females of various sizes. False killer whales may associate with other species, e.g. bottlenose dolphins and other small cetaceans, possibly indicating shared or overlapping feeding grounds (Odell and McClune, 1999). Long-term bonds between individuals have been documented in Hawaiian waters (Baird et al. 2008).

Reproduction: Both sexes seem to mature between 8 and 14 years of age and maximum age seems to be 57 years in males and 62 in females (Baird, 2009). No seasonality in breeding is known for the false killer whale (Jefferson et al. 1993).

Food: Although false killer whales eat primarily fish and cephalopods, they also have been known to attack small cetaceans and, on one occasion, even a humpback whale (Jefferson et al. 1993). Depending on location, stomach contents included salmon (*Oncorhynchus* sp.), squid (*Beryteuthis magister* or *Gonatopsis borealis*), sciaenid and carangid fish, bonito (*Sarda* sp.), mahi mahi or dolphin-fish (*Coryphaena hippurus*), yellowfin tuna (*Thunnus albacares*), yellowtail (*Pseudosciana* spp.), perch (*Lateolabrax japonicus*), mackerel, herring and smelt (Odell and Miller McClune, 1999, and refs. therein).

Koen-Alonso et al. (1999) examined the stomachs of false killer whales from both coasts of the Strait of Magellan, Chile. The most important prey were the oceanic and neritic-oceanic squids *Martialia hyadesi* and *Illex argentinus*, followed by the neritic fish *Macruronus magellanicus*. The prey species were subantarctic, with two antarctic species, abundant over the Patagonian shelf and adjacent oceanic waters around Tierra del Fuego. There are reports that *Pseudorca* fed on and chased other dolphins in the eastern tropical Pacific during chase and backdown operations of tuna purse seine fishing, a habit that has also been attributed to the pygmy killer whale (*Feresa attenuata*) (Odell and McClune, 1999, and refs. therein).

In an individual stranded on Gran Canaria the stomach contained cephalopod beaks from six species, the most important by number being *Thysanoteuthis rhombus*, *Argonauta* sp. and ommastrephids. Most of the cephalopod species represented inhabit the epipelagic zone (Hernandez-Garcia, 2002).

False killer whales maintained in captivity consume up to 4.3% of their body mass per day, which amounts to between 5000 and 6000 kg annually (body mass up to 450 kg) (Kastelein et al. 2000).

5. Migration

Migration is not well documented, although it has been suggested that closely related globicephalid whales including *Globicephala*, *Pseudorca* and *Grampus* species in the western North Pacific move from warmer, southern waters in winter to cooler, northern waters in summer. Apparent seasonal movements in the western North Pacific may be related to prey distribution. False killer whales have been seen travelling in line formation, and one large herd of about 300 individuals was distributed over an area km long and about a km wide. Reported travelling speeds are 3–6 knots and as high as 10 knots (Odell and McClune, 1999, and refs. therein).

The population around Hawaii seems to show strong site fidelity: although individual movements of up to 283 km were documented, with a large proportion of individuals moving among islands. Individuals were resighted up to 20.1 yr after first being documented, showing long-term fidelity to the islands. Resighting rates were high, with an average of 76.8% of distinctive individuals within groups documented on more than one occasion (Baird et al. 2008).

6. Threats

Direct catch: *Pseudorca* are occasionally taken in Japan for food and at St. Vincent Island in the Caribbean for meat and cooking oil (Jefferson et al. 1993; Odell and McClune, 1999). In a molecular monitoring of 'whalemeat' markets in the Republic of South Korea, false killer whale meat was detected. Significant inconsistencies were found in the expected

frequencies of products from most species, including a large over-representation of false killer whales (Baker et al. 2006).

Incidental catch: Incidental take of small numbers of false killer whales in gill nets has occurred off northern Australia, the Andaman Islands, the southern coasts of Brazil and in tuna purse seines in the eastern tropical Pacific. Dolphin entrapment in tuna purse seine nets may be providing artificial feeding opportunities for *Pseudorca* on other marine mammals (Odell and McClune, 1999; Alves et al. 2002).

Yang et al. (1999) reported on by-catch rates in Chinese coastal fisheries (trawl, gill and stow net) which may number in the hundreds per year for *P. crassidens* alone. Between 1994 and 2006, 24 false killer whales were observed hooked or entangled in Hawaii-based longline fisheries, with approximately 4-34% of all effort observed. Fifteen additional unidentified cetaceans, which may have been false killer whales based on the observer's descriptions, were also taken (hooked or entangled) in this fishery (Forney and Kobayashi 2007). The rate of mortality and serious injury to false killer whales within the Palmyra Atoll EEZ in the Hawaii-based longline fishery is estimated at 1.2 animals per year (Caretta et al. 2008).

There was 1 reported fisheries-related stranding of a false killer whale in the Gulf of Mexico during 1999-2006 (Waring et al. 2008).

Culling: The largest documented fisheries interaction was in the waters around Iki Island, Japan, where over 900 false killer whales were killed in drive fisheries from 1965 to 1980 in an attempt to reduce interactions with the yellowtail (*Pseudosciaena* spp.) fishery (Jefferson et al. 1993; Odell and McClune, 1999).

Pollution: High levels of pesticides (DDE) and heavy metals (mercury) were detected in stranded specimens, and one individual had the remains of a plastic jug in its stomach (Odell and McClune, 1999 and refs. therein). Concentrations of butyltin (BT) and phenyltin (PT) compounds of specimens stranded on the coasts of Thailand were higher than in other odontocetes: False killer whales feed on squid and large pelagic fish containing higher concentrations of organotin (OT) compounds and may thus be particularly concentrating these compounds (Harino et al. 2007).

Noise pollution: Nachtigall et al. (2008) showed that false killer whales have very acute hearing capabilities including an active 'automatic gain control' mechanism. This entails a high susceptibility to marine noise pollution.

7. Remarks

Range states (Taylor et al. 2008)

American Samoa; Anguilla; Antigua and Barbuda; Argentina; Aruba; Australia; Bahamas; Bangladesh; Barbados; Belize; Benin; Bermuda; Brazil; British Indian Ocean Territory; Brunei Darussalam; Cambodia; Cameroon; Canada; Cape Verde; Cayman Islands; Chile; China; Cocos (Keeling) Islands; Colombia; Congo; Congo, The Democratic Republic of the; Cook Islands; Costa Rica; Côte d'Ivoire; Croatia; Cuba; Denmark; Djibouti; Dominica; Dominican Republic; Ecuador; Egypt; El Salvador; Equatorial Guinea; Fiji; France; French Guiana; French Polynesia; Gabon; Gambia; Germany; Ghana; Gibraltar; Greece; Grenada; Guadeloupe; Guam; Guatemala; Guinea; Guinea-Bissau; Guyana; Haiti; Honduras; Hong Kong; India; Indonesia; Iran, Islamic Republic of; Ireland; Israel; Italy; Jamaica; Japan;

Jordan; Kenya; Kiribati; Kuwait; Liberia; Madagascar; Malaysia; Maldives; Malta; Marshall Islands; Martinique; Mauritania; Mexico; Micronesia, Federated States of; Morocco; Mozambique; Myanmar; Namibia; Netherlands; Netherlands Antilles; New Caledonia; New Zealand; Nicaragua; Nigeria; Niue; Northern Mariana Islands; Norway; Oman; Pakistan; Palau; Panama; Papua New Guinea; Peru; Philippines; Pitcairn; Portugal; Puerto Rico; Qatar; Saint Helena; Saint Kitts and Nevis; Saint Lucia; Saint Pierre and Miquelon; Saint Vincent and the Grenadines; Samoa; Sao Tomé and Príncipe; Senegal; Sierra Leone; Singapore; Solomon Islands; Somalia; South Africa; Spain; Sri Lanka; Suriname; Syrian Arab Republic; Taiwan, Province of China; Tanzania, United Republic of; Thailand; Timor-Leste; Togo; Tokelau; Tonga; Trinidad and Tobago; Turkmenistan; Turks and Caicos Islands; United Arab Emirates; United Kingdom; USA; Uruguay; Vanuatu; Venezuela; Viet Nam; Virgin Islands, British; Virgin Islands, U.S.; Wallis and Futuna; Western Sahara; Yemen

P. crassidens is classified as “Data Deficient” by the IUCN (Taylor et al. 2008). The species is not listed by CMS. Listed in Appendix II of CITES .

See more recommendations for South American populations in the Hucke-Gaete (2000) report in Appendix 1 and for southeast Asian populations in Perrin et al. (1996) see Appendix 2.

8. Sources

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